

AMENDMENTS**In the Claims****Current Status of Claims****Claims 1 - 36(canceled)**

1 37.(**withdrawn**) A circular extrusion die comprising
2 distribution section for forming at least a first molten polymer material into a generally even
3 circular flow, and
4 bodily separate from said distribution section an exit section comprising
5 an annular main channel with generally cylindrical or conical walls for receiving said generally
6 circular flow of said first polymer material and conducting the same to an annular exit orifice to exit
7 there from as a tubular film structure,
8 said exit section also comprising a channel system spaced radially from said main channel
9 for extrusion from the circumference of said exit section of a circular array of narrow strands of a
10 second molten polymer material,
11 said channel system ending in a circular row of internal orifices opening into a circular wall
12 portion of the main channel upstream of said exit orifice so that said circular array of said second
13 polymer material merges with the circular flow of said first polymer material as circumferentially
14 spaced strands superimposed on said circular flow.

1 38.(**withdrawn**) A circular extrusion die according to claim 37 wherein said channel system
2 for said circumferential extrusion begins at at least one inlet in said exit section and comprises
3 for delivering said second polymer material to each said internal orifice a labyrinthine sub-
4 channel system communicating at one end with such inlet and at the other end with the respective
5 internal orifice,
6 said sub-channel system comprising at least three channel-branchings between said ends to
7 promote a balanced division of polymer flow to said internal orifices.

Claims 39 - 73(canceled)

1 74.(**withdrawn**) A circular extrusion die according to claim 38 which further comprises a
2 small circumferential channel in said wall portion of said circular main channel upstream of the exit

1 thereof, said internal orifices opening in common into said small channel.

1 75.(withdrawn) An extrusion die according to claim 37 which further comprises an additional
2 circular channel for extruding a circular flow of a third molten polymer material on the side of said
3 generally circular flow of said first polymer material facing said circular array of narrow strands of
4 said second material upstream of the point where the circular array merges with first circular flow
5 to thereby form on the first circular flow of said first polymer material a continuous layer of said
6 third polymer material underlying said circular array of narrow strands upon its merger with the first
7 circular flow.

1 76.(previously presented) A cross-laminate comprising:
2 at least one pair of two adjacent separately coextruded films A and B which are laminated
3 together in sandwich relation at least partially by heating,
4 each of said films A and B having an uniaxial or unbalanced biaxial molecular orientation
5 with the main direction of orientation in film A crossing the main direction of orientation in film B
6 and
7 said films each comprises a continuous main layer consisting of a polymer material selected
8 to give high tensile strength,
9 on at least the mutually facing sides of said main layers a first surface layer of a different
10 polymer material,
11 and interposed between each first surface layer and its main layer a second surface layer of
12 a different polymer material,
13 said first surface layer on the main layer of each of the films A and B being a discontinuous
14 layer consisting of at least one array of coextruded thin strands with the strands in the arrays of the
15 two films arranged in crossing relation to one another,
16 the polymer material of said second surface layers being selected to control the lamination
17 strength in the strand-free regions thereof and
18 the polymer material of the strands being selected to control the lamination strength at the
19 crossing points of the strand arrays such that the lamination strength is highest at the strand crossing
20 points.

1 77.(currently amended) A cross-laminate according to claim ~~76~~ wherein:

1 the strands in the respective arrays are in contact with one another at their crossing points
2 and are of a polymer material such as to be directly laminated to each other at said crossing points.

1 78.(currently amended) A cross-laminate according to claim 76 wherein:

2 the polymer material of the strands of at least one of said arrays comprises coloration
3 material in sufficient amount, and/or coloration, or amount and coloration to render the strands
4 visible through at least one side of the cross-laminate.

1 79.(previously presented) A cross-laminate according to claim 76 wherein:

2 the thickness of the strands in the first surface layer of each of said films A and B is not
3 greater than 20% of the thickness of the respective film.

1 80.(previously presented) A cross-laminate according to claim 76 wherein:

2 the collective area of the strands in each of said first surface layers constitutes not more than
3 60% of the area of the respective film side.

1 81.(previously presented) A cross-laminate according to claim 76 wherein the thickness increase
2 in each of said films A and B at the locations where the strands are present is at most 20% of the
3 film thickness in adjacent strand-free regions thereof.

1 82.(previously presented) A cross-laminate according to claim 76 wherein the distance from the
2 center-to-center of adjacent pairs of strands in each array is between 2 mm and 40 mm.

1 83.(previously presented) A cross-laminate according to claim 76, wherein:

2 the lamination strength at said crossing points of the thin strands of said arrays is at least 40
3 g cm⁻¹, as measured by a peel test carried out on narrow specimens of the cross-laminate at a
4 velocity of about 1 mm sec⁻¹,

5 and the lamination strength in the strand-free regions is at the highest 75% of the bonding
6 strength between the strands at said crossing points, as measured by said peel test.

1 84.(previously presented) A cross-laminate according to claim 76 comprising: an assembly of:
2 a common film A having a main layer with a strand-formed first surface layer on both of its

1 96.(previously presented) A cross-laminate according to claim 76 wherein:
2 the lamination strength in said strand-free regions of said cross-laminate is not more than
3 50% of the lamination strength at said crossing points of the strands thereof, as measured by a peel
4 test carried out on narrow specimens of the cross-laminate at a velocity of about 1 mm sec'.

1 97.(currently amended) A cross-laminate according to claim 78 having a general thickness at
2 the highest of about 0.3 mm, and:

3 wherein a said film A is situated at one of its sides,
4 said film A having its exterior surface corrugated to form a visible pattern of striations
5 extending in one direction
6 with the spacing of said striations in said pattern being at most about 3 mm,
7 the main layer and said second surface layer of said film A are substantially transparent to
8 enable the coloured strands to be visible when the laminate is observed from the an A-side, and
9 the depth of the corrugations is sufficient to impart a three-dimensional effect to said cross-
10 laminate such that the strands appear to be spaced internally from the exterior surface of said film
11 A a distance substantially greater than the actual maximum thickness of said film A.

1 98.(currently amended) A cross-laminate according to claim ~~76~~ wherein:
2 said first surface layer on each of the films A and B constitutes at the highest 5% of the
3 volume of the corresponding film.

1 99.(previously presented) A cross-laminate according to claim 76 wherein:
2 the average melting point of the polymer material which constitutes the strand-formed first
3 surface layer of each of said films A and B is at least about 20°C lower than the average melting
4 point of the polymer material which constitutes the main layer thereof.

1 100.(previously presented) A cross-laminate according to claim 76 wherein the distance from
2 center-to-center of adjacent strands of each said first surface layer is not greater than 20 mm.

1 101.(previously presented) A method of manufacturing a cross-laminate comprising at least two
2 polymer films A and B which comprises:

1 separately forming each of said at least two films A and B by coextruding:
2 a main layer of a polymer material selected to give high tensile strength,
3 a discontinuous first surface layer of a different polymer material forming an array
4 of thin strands extending in the direction of extrusion and
5 interposed between said main layer and its first surface layer a continuous second
6 surface layer of a different polymer material
7 and imparting to each of said polymer films a uniaxial or unbalanced biaxial molecular
8 orientation;
9 bringing said films A and B together in sandwich relation with said main directions of
10 orientation in crossing relation with the said arrays on mutually facing sides of said films and the
11 directions of the strands in said arrays in crossing relation and
12 laminating said films A and B together at least partly by heating to form a laminate;
13 selecting the polymer material of said continuous second layers to control the lamination
14 strength in the strand-free regions thereof; and
15 selecting the polymer material of the strands of the each such array to control the lamination
16 strength at the crossing points of the strand arrays such that the lamination strength is highest at the
17 strand crossing points.

1 102.(previously presented) A method according to claim 101 wherein:
2 at least one of said films A or B is coextruded as a tubular film,
3 orientation is imparted to said tubular film by drawing down the same while twisting to give
4 a helical direction of orientation thereto,
5 and comprising the further step of:
6 subsequently cutting open said tubular film at an angle to the main direction of
7 orientation and to the direction of said array of strands thereof.

1 103.(previously presented) A method according to claim 101 wherein:
2 at least one of said films A and B is coextruded in a circular coextrusion die in tubular form
3 with a circumference at the exit of said die of at least 20 cm, and
4 the first surface layer thereof is coextruded discontinuously so that the distance from center-
5 to-center of adjacent strands in the tubular film at the exit from said die is at the highest 4 cm.

1 108.(previously presented) A method according to claim 101 wherein:

2 the separate coextrusions of said films A and B are so controlled that the relative rates of
3 extrusion flow of the polymeric materials of said main, second and first surface layers of said films
4 A and B are such that said first surface layer on each of the films A and B constitutes at the highest
5 10% of the volume of the respective film A or B.

1 109.(previously presented) A method according to claim 101 wherein:

2 the average melting point of the polymer material of said strand-formed first surface layer
3 of each of said films A and B is at least about 10°C lower than the average melting point of the
4 polymer material of the main layer thereof.

1 110.(previously presented) The method according to claim 101 wherein the polymer material of
2 the strand-formed array of at least one of said films A and B comprises coloration material in
3 sufficient amount and/or coloration to render the strands visible through at least one side of the
4 cross-laminate.

1 111.(previously presented) A method according to claim 101 wherein:

2 the polymer materials of said main layer and said second continuous layer of said film A are
3 sufficiently transparent to render the strands of said first surface layer thereof visible therethrough,
4 and

5 coextrusion conditions for the respective films are controlled so that the general thickness
6 of the final laminate is not more than about 0.3 mm, which further comprises:

7 embossing at least the exterior surface of said film A into corrugations forming a pattern of
8 striations extending in one direction with corresponding thickness variations in said film,

9 the separation between the striations in said pattern being not more than about 3 mm and

10 the depth of the corrugations being sufficient to impart a three-dimensional effect to the
11 cross-laminate such that the strands when viewed from the A-side appear to be spaced internally
12 from the exterior surface of said film a distance substantially greater than the actual maximum
13 thickness of said film A.

1 112.(previously presented) A method according to claim 111 wherein: said embossing is carried
2 out by:

1 passing said films A and B after they have been brought together in sandwich relation and:
2 before or after said films have been laminated through at least one pair of mutually
3 intermeshing grooved rollers to form said corrugations while simultaneously effecting a transverse
4 stretching of the same.

1 113.(previously presented) A method according to claim 101 wherein:
2 the separate coextrusions of said films A and B are so controlled that the relative rates of
3 extrusion flow of the polymeric materials of said main, second and first surface layers of said films
4 A and B are such that said first surface layer on each of the films A and B constitutes at the highest
5 5% of the volume of the respective film A or B.

1 114.(previously presented) A method according to claim 101 wherein:
2 the average melting point of the polymer material of said stand-formed first layer of each of
3 said films A and B is at least about 20°C lower than the average melting point of the polymer
4 material of the main layer thereof.

1 115.(previously presented) A method according to claim 102 wherein:
2 said first surface layer of said tubular film is coextruded discontinuously so that the distance
3 from center-to-center of adjacent strands thereof is at most 20 mm.

1 116.(previously presented) A method according to claim 101 wherein: said laminating comprises:
2 extruding between said films A and B an intermediate layer of a molten polymer material
3 selected to effect lamination of the films as they are brought together in sandwich relation and
4 cooled.

1 117.(previously presented) A method according to claim 101 which further comprises
2 coextruding at least one of said films A and B with a said discontinuous surface layer on both
3 of its sides,
4 separately coextruding a film C having a said main layer with a said first discontinuous
5 surface layer and a said second continuous surface layer on at least one of its sides and
6 laminating said film C to an exterior side of at least one of said films A and B with the first
7 surface layer of film C facing said exterior side before, during or after films A and B are brought

